University of Western Ontario

IN-VITRO COMPARISON OF THREE INDIRECT BONDING ADHESIVE SYSTEMS AND A DIRECT BONDING CONTROL

Dr. Mitch Miller, Dr. Timothey Foley, Dr. Antonios Mamandras, Dr. Lesley Short, Dr. Amin Rizkalla, Dr. David Banting, Dr. Sherri Leung*
University of Western Ontario

Aim: This in-vitro study investigated shear peel bond strength (SPBS), bond failure upon transfer tray removal, adhesive remnant index (ARI), and enamel fracture incidence for three indirect bonding adhesive systems[1,2,3] compared to a direct bonded control[4].

Materials and Methods: One hundred ninety-two human bicuspid teeth were arranged in acrylic bases mimicking human archforms, with four arches per group. Teeth were etched, bonded, stored for 100 days at 37°C, thermocycled and subsequently debonded with an Instron universal testing machine.

Results and Conclusions: All adhesive groups demonstrated sufficient in-vitro SPBS values. Significant differences ($p<0.05$) were found among the four adhesive groups. The Direct and Light-Cured indirect groups had significantly higher bond strengths than the other indirect groups. The lowest SPBS values observed in all groups were clinically acceptable; however, the lowest values in the Sondhi and Thermacure groups less optimal. Two bond failures were noted upon transfer tray removal, one in the Sondhi group and one in the Light-Cured indirect group. ARI values showed the Direct group experienced mainly adhesive-bracket interface failures, while Indirect groups demonstrated cohesive bond failures, with a disproportionately high number of enamel-adhesive failures in the Sondhi indirect group. Despite having the highest SPBS, the Light-Cured group exhibited the lowest incidence of enamel fracture.

[1]Sondhi (Transbond XT base, MIP primer, Sondhi Rapid Set A+B chemical cure adhesive)
[2]Light-Cured (Transbond XT base, MIP primer, Filtek Supreme Plus flowable light-cured resin)
[3]Thermacure (Thermacure base, Assure primer, FlowTain flowable light-cured resin)
[4]Direct (Transbond XT with MIP primer)

IMPACTED CANINES TREATED WITH CLOSED VS OPEN SURGICAL-ORTHODONTIC APPROACH: A SUBJECTIVE EVALUATION

Dr. Nadia Nizam, Dr. Lesley Short, Dr. Antonios Mamandras, Dr. Bruce Hill, Dr. Sahza Hatibovic-Kofman, Dr. David Banting, Dr. Alison Stefanuto*
University of Western Ontario

Purpose: This study examined differences in esthetic outcome of palatally impacted maxillary canines treated with either open or closed surgical exposure techniques.

Materials and Methods: Sixteen subjects in each group had a unilateral impacted maxillary canine of equal severity. The contralateral untreated canine was used as a control. Final esthetic outcome was assessed by orthodontists, dentists, and lay persons using a 100mm visual analog scale. Features evaluated included crown height, attached gingiva, mesiodistal tip, buccolingual torque, rotation, and overall esthetics.

Results: No statistical or clinical difference in overall esthetics between the closed and open surgical techniques was found, as rated by each examiner group. Orthodontists and dentists found torque unsatisfactory regardless of surgical exposure technique. Orthodontists found the amount of attached gingiva unsatisfactory for both surgical techniques compared to the untreated side, although open exposure results were generally preferred over closed exposure. Orthodontists also found the closed technique led to unsatisfactory crown height, rotation, and tip. Dentists found the closed technique led to unsatisfactory tip, rotation, attached gingiva and crown height when comparing treatment to control. Lay persons were unsatisfied with tip, torque, and rotation in both treatment groups when compared to control, while attached gingiva and crown height were less satisfactory for closed surgical exposure vs. controls.

Conclusion: Closed surgical exposure of palatally impacted maxillary canines led to less satisfactory esthetic outcomes than open surgical exposure. Although the difference was statistically significant, no clinical significance was established between open and closed treatment groups or between treatment and control canines.